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	(continued on next page)	

(54) Abstract Title: **Brush sealing for screen edge**

(57) An edge sealing means 8 for an edge of a sliding flexible screen 1 comprises a pair of sealing brushes 17, 18, one on each side of the screen. Each sealing brush comprises brush filaments 20 projecting at an angle from a base 19, the bases being non-pivottally mounted in channels 16. The channels have open sides which directly face each other, with the screen edge disposed between. The sealing means may be angled to the base at between 30° and 60°, preferably 45°, and the filaments of one brush may be longer than the other brush to form an offset line of contact. The brushes may have a filament density of less than 150 filaments per centimetre and may have filaments spaced along the base like tufts.

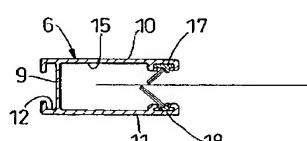


Fig. 2

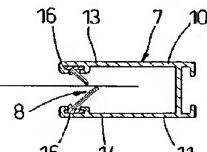


Fig. 3

GB 2414762 A continuation

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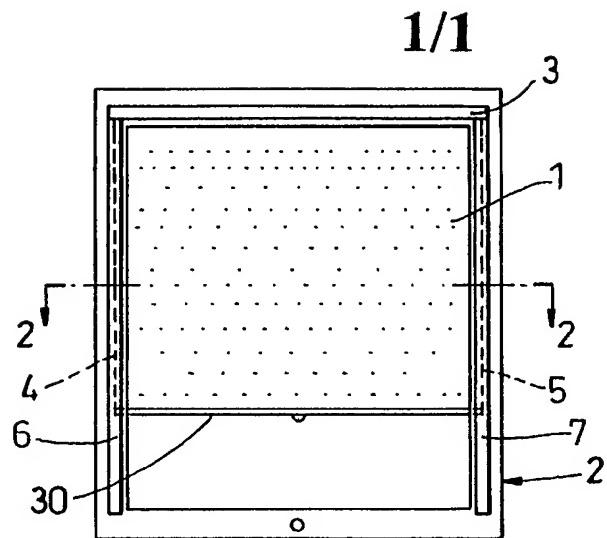


Fig. 1

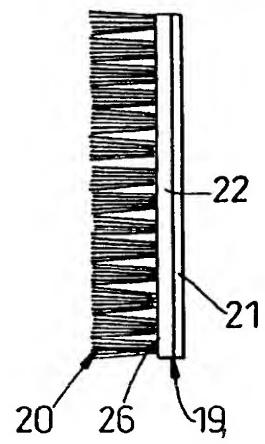


Fig. 5

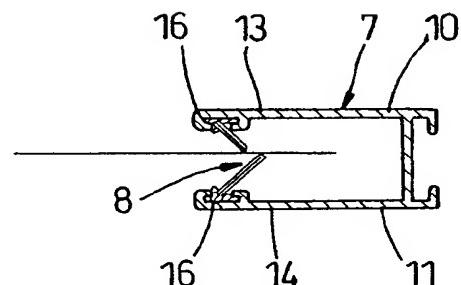
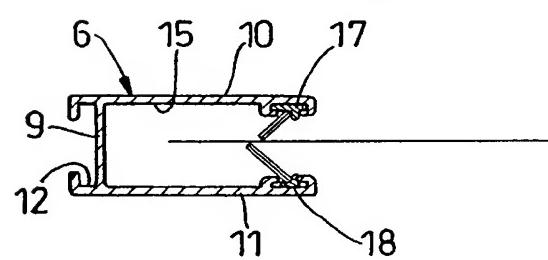


Fig. 2

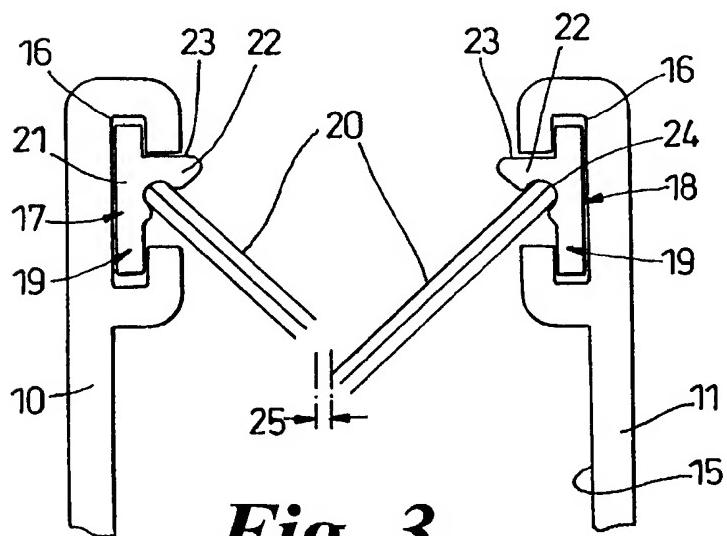


Fig. 3

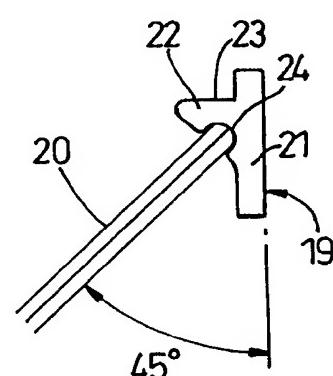


Fig. 4

SLIDING SCREEN EDGE SEALS

This invention relates to sealing means for the edges of sliding screens of flexible material, such as fly screens, sun screens and the like.

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Fly screens are flexible mesh laminar members, designed to cover windows and doors in a building to prevent ingress of insects while allowing the window or door to be open. Typically a fly screen is mounted to slide downwards to cover the opening, like a roller blind, or 10 across the opening, like a patio door. In either case, the free edge has a sliding rail by which it is moved, and opposing edges of the screen are guided to slide in respective guide channels formed in side members, which are typically aluminium extrusions. The sliding edges of the screen need sealing means to prevent insects entering between the edge 15 and the guide channel.

One known sealing means comprises a pair of elongate sealing brushes, one on each side of the screen edge. Each has brush filaments projecting at right angles from a base received in a brush channel in the side 20 member. The brush filaments are also at right angles to the screen. This arrangement works well to exclude insects, except when the screen is blown by the wind, when the edge tends to come out of its guide channel. The brush filaments are unable to hold the edge against movement out of the plane in which it slides.

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In another known sealing means, which overcomes this problem, one of the sealing brushes is replaced by a pile strip, while the base of the other brush can pivot in its brush channel. The pivoting brush moves away from the screen to allow the edge of the screen to slide, but moves 30 towards it when the wind blows to hold it securely. Although this arrangement holds the edge in the wind, it has the disadvantage that the

pivoting brush requires a specially-shaped brush channel, so that it cannot be used in existing brush channels, but requires replacement of the side members.

- 5 A further known sealing means is disclosed in DE-A-196 39 478 (Neher Systeme GmbH & Co.) in which the sealing brushes are inclined to the screen. The brushes are mounted in specially angled brush channels and the brush filaments extend therefrom whereby their free ends are in contact. The arrangement being such that the screen slides between the
10 brushes. This has the disadvantage that the screen is abraded as it slides and can snag on the brushes due to their close contact.

According to the invention, edge sealing means for an edge of a sliding screen of flexible material comprises a pair of sealing brushes, each said
15 sealing brush comprising brush filaments projecting from a base, said base being non-pivotaly mounted within a channel having an open side, one channel on each side of said screen such that said open sides directly face one another, wherein said brush filaments are inclined relative to said base and to said open side and in the same direction relative to said
20 screen.

The sealing brushes may be mounted in a brush channel. When sealing brushes of known type, with the filaments perpendicular to the base, are used the brush channels need to be inclined. The brush channels will then
25 take up more room. Brush filaments that are inclined to the base can use existing brush channels and therefore side members do not need to be change. Having both brush filaments inclined in the same direction to the screen, but non-pivoting bases, is effective to exclude insects, and allows the edge to slide, but also holds the edge effectively when the wind
30 blows, against movement out of the sliding plane.

Where the brush filaments are angled relative to the base, the base preferably includes an extension adapted in use to project out of the brush channel. A sliding rail mounted on a free edge of the screen will then come into contact with the extension rather than the brush channel as it

- 5 moves, and if the base is of plastics, this will reduce wear on the edge of the sliding rail.

The density of the brush filaments at their free ends is dependent upon the gauge of the individual filaments. However, it has been found preferable

- 10 to use a brush filament density of less than 150 filaments per centimetre to ensure there is sufficient spacing to permit effective meshing of the brush and screen in order to hold the screen against movement.

Preferably, one of the brush filaments is longer than the other, so that the

- 15 lines of contact between the screen and the brushes are offset. The line of contact between the screen and the longer brush will be displaced outwardly of the screen. This assists in the sliding of the screen. On movement of the screen out of its sliding plane, the screen is caught by at least one of the brushes, and the offset lines of contact ensure that it is
20 released easily.

Preferably, each of the brush filaments is inclined in the range of 30° to 60° to the screen. However, the angle of inclination could be about 45°.

Further, the brush filaments need not be inclined at the same angle.

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Conveniently, the sealing brushes are formed by co-extruding monofilament brush filaments with a plastics base. The gauge of the monofilament is preferably between 0.1mm and 0.25mm.

- 30 An embodiment of the invention is illustrated, by way of example only, in the accompanying drawings, in which:

Figure 1 shows schematically a window with a sliding screen;

Figure 2 shows a section along the line 2-2 of Figure 1;

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Figure 3 is an enlarged view of part of Figure 2, showing the sealing means for the edge of the screen; and

10 **Figure 4** is an end view of a sealing brush shown in Figures 2 and 3.

Figure 5 is a side view of a sealing brush shown in Figures 2, 3 and 4.

- 15 Figure 1 shows a sliding screen 1, in this case a mesh fly screen, adapted to cover a window 2 in a building. The screen 1 operates like a roller blind, being housed in a cassette 3 at the top of the window frame, and being pulled down by a sliding rail 30 and fastened at the bottom of the window 2 as required, and then retracted when not required. The side edges 4, 5 slide in respective side members 6, 7, which are of known type. The side members are fixed to the window frame, and have sealing means 8 preventing ingress of insects round the edges 4, 5.
- 20

25 The side members 6, 7 are shown in more detail in Figure 2. Each side member 6, 7 is an aluminium extrusion of substantially U-shape, with a base 9 transverse to two opposed elongate members 10, 11. The outer ends (relative to the window 2) of the members 10, 11 are inturned to form with the base 9 a small open-faced channel 12. The inner ends 13, 14 are longer, and define between them a guide channel 15 in which 30 an edge 4, 5 of the screen is received and guided for sliding. Each inner end 13, 14 of the members 10, 11 is formed with an open-sided brush

channel 16 to receive part of the sealing means 8. Each brush channel 16 is formed at the inner end of the guide channel 15, so that the open sides of the brush channels 16 face one another.

- 5 The sealing means 8 received in the brush channels 16 are shown in more detail in Figures 3 and 4, and comprise a pair of sealing brushes 17, 18. Each is formed by a plastics base 19 adapted to be received in the channel 16, and brush filaments 20 projecting at an angle of about 45° to the base 19. Each base 19 has a flat portion 21 able to slide in the channel 16, 10 and an extension 22 projecting substantially at right angles to the flat portion 21. The extension 22 projects beyond the channel 16, and on one side has a flat surface 23 for engagement with the edge of the channel 16 and on the other side a recess 24 in which the brush filaments 20 are received. The brush filaments 20 comprise a polypropylene monofilament 15 having a gauge of 0.18mm, and the base 19 and filaments 20 are co-extruded.

It will be seen from Figure 3 that the sealing brushes 17, 18 are both inclined in the same directions towards the screen 1, so that the angle 20 between them is approximately 90°. Further, the brush filaments 20 on the brush 18 are longer than those on the brush 17, and a gap 25 is defined between the free ends of brush filaments 20 of the brushes 17, 18, to allow for passage of the screen 1.

- 25 In use, with the sealing brushes 17, 18 received in the channels 16 of the side members (the flat portion 21 of the base 19 simply slides into the brush channel 16) the edges 4, 5 of the screen 1 are received in the respective guide channels 15, in the gap 25 between the sealing brushes 17, 18. The brush filaments 20 deflect as necessary to allow the edges 30 4, 5 to slide, and with the screen 1 pulled down act to prevent insects entering round the edges 4, 5 of the screen 1.

When the wind blows, the screen 1 will move out of the plane in which it slides, as it tends to balloon inwardly or outwardly. On movement of the edges 4, 5 out of the sliding plane, the brush filaments 20 act to catch the
5 edges 4, 5 to prevent them coming out of the guide channel 15. When the edges return to the sliding plane, they are released by the filaments 20, to allow sliding movement of the screen 1.

The embodiment shown in the drawings has a number of advantages.
10 Firstly, it works well to retain the screen edges when the wind blows, while making use of the standard side members 6, 7. It also allows for easy sliding of the screen 1. It will also be appreciated that the lines of contact of the brush filaments 20 on the two sealing brushes 17, 18 with the screen 1 are offset, with that for the shorter brush 17 being inward of
15 that for the brush 18. This has the advantage that the wear occurs at a different place on each side of the screen 1. A further wear-reducing feature is the extension 22; as the sliding rail 30 slides it will tend to come into contact with the plastics extension 22 rather than the aluminium channel 16.

20 It will be appreciated that, although the brush filaments 20 are both shown at 45° to the base 19, the angle could be changed. Thus, the two brush filaments could be at different angles, or they could be at the same angle, which could be between 30° and 60°. The relative lengths of the
25 two brush filaments would be chosen accordingly. The gauge of the monofilament may also be chosen as required, preferably from the range 0.1mm to 0.25mm. The gap 25 may also be varied if required.

Figure 5 shows a side view of a sealing brush comprising the base 19 and
30 brush filaments 20. The brush filaments 20 form a region of substantially uniform density at their free ends while at their bases they are grouped in

spaced tufts 26. The brush filaments 20 may be substantially uniform at their bases and free ends if required.

CLAIMS

1. An edge sealing means for an edge of a sliding screen of flexible material comprises a pair of sealing brushes, each said sealing brush comprising brush filaments projecting from a base, said base being non-pivottally mounted within a channel having an open side, one channel on each side of said screen such that said open sides directly face one another, wherein said brush filaments are inclined relative to said base and to said open side and in the same direction relative to said screen.
2. An edge sealing means as claimed in claim 1, in which the angle of inclination to the base of each of the brush filaments is between 30° and 60°.
3. An edge sealing means as claimed in claim 1 or claim 2, in which the brush filaments are inclined at approximately 45° to the base.
4. An edge sealing means as claimed in any of claims 1 to 3, in which one of the brush filaments is longer than the other, so that the lines of contact between the screen and brushes are offset.
5. An edge sealing means as claimed in any of claims 1 to 4, in which each sealing brush is mounted in a brush channel and each base includes an extension adapted in use to project out of the brush channel to come into contact with a sliding rail of the sliding screen.
6. An edge sealing means as claimed in any of claims 1 to 5, in which the brushes are arranged so that a gap is provided between them for the screen.

7. An edge sealing means as claimed in any of claims 1 to 6, in which the brush filaments are arranged being such that at their free ends they form a region of brush filament density of less than 150 filaments per centimetre.

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8. An edge sealing means as claimed in any of claims 1 to 7, in which the density of the brush filaments at their free ends is greater than 10 filaments per centimetre.

10 9. An edge sealing means as claimed in any of claims 1 to 8, in which the density of the brush filaments at their free ends is substantially 100 filaments per centimetre.

10. An edge sealing means as claimed in any of claims 1 to 8, in which
15 the density of the brush filaments at their free ends is substantially 120 filaments per centimetre.

11. An edge sealing means as claimed in any of claims 1 to 10, in which the bases of the brush filaments are grouped in spaced tufts.

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12. An edge sealing means of the kind set forth substantially as described herein with reference to and as illustrated in Figures 1-5 of the accompanying drawings.



Application No: GB0517162.4

Examiner: John Rowlatt

Claims searched: 1-12

Date of search: 29 September 2005

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	EP0500059 A2 (Showa Orifa Co. Ltd.)
A	-	WO96/18796 A1 (Bettio)
A	-	US4467853 A (Downey, Jr.)
A	-	DE19639478 A1 (Neher Systeme GmbH)
A	-	DE29615872 U1 (Neher Systeme GmbH)
A	-	DE8802780 U1 (Warems Renkhoff GmbH)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art
Y	Document indicating lack of inventive step if combined with one or more other documents of same category	P	Document published on or after the declared priority date but before the filing date of this invention
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

E1J

Worldwide search of patent documents classified in the following areas of the IPC⁰⁷

E06B

The following online and other databases have been used in the preparation of this search report

EPODOC, JAPIO, WPI.